AMENDMENTS TO THE CLAIMS

The following claims replace all prior versions and listings of claims in the application:

1. (Currently Amended) A method for defining tone signals in a voice activity detection (VAD) device, comprising:

defining a threshold for zero amplitude change;

calculating a zero crossing rate of a signal;

extracting a set of parameters from a plurality of duration periods of said signal;

defining a tolerance threshold between said plurality of duration periods when a

zero amplitude change occurs;

calculating a maximum difference between said plurality of duration periods; and comparing said maximum difference with said threshold.

2. (Currently Amended) The method of claim 1, wherein said calculating said zero crossing rate comprises:

determining, for a signal sample with a zero value amplitude at the zero crossing point, a tangent value of the sample; and

defining the zero value amplitude as a non-zero value depending upon the tangent of said sample point.

- 3. (Currently Amended) The method of claim 2, wherein said defining comprises defining said zero value amplitude according to whether said tangent is positive or negative.
- 3. (Cancelled)
- 4. (Currently Amended) The method of claim 1, further comprising: where a portion of said signal does not contain a zero crossing point, defining a range of said signal that does not contain contains a zero crossing point; extracting a set of parameters from a plurality of duration periods of said range; calculating a maximum difference between said plurality of duration periods in said range; and comparing said maximum difference of said range with said threshold.
- 5. (Currently Amended) The method of claim 1, wherein the maximum difference is calculated between a sum of all said durations and a single said duration.
- 6. (Currently Amended) The method of claim 1, wherein the maximum difference is calculated using a mean difference between a sum of all said durations and a single duration.

- 7. (Currently Amended) The method of claim 1, wherein the method defines tone signals according to an International Telecommunications Union (ITU) recommendation G.729 Annex B VAD device.
- 8. (New) The method of claim 1, wherein said calculating said maximum difference comprises calculating a product between the sample and the sample's adjacent sample in a group of signal samples.
- 9. (New) A device for defining tone signals for voice activity detection (VAD), comprising:

a processor that is programmed to:

define a threshold for zero amplitude change;

calculate a zero crossing rate of a signal;

extract a set of parameters from a plurality of duration periods of said signal; calculate a maximum difference between said plurality of duration periods; and compare said maximum difference with said threshold.

10. (New) The device of claim 9, wherein said processor calculates said zero crossing rate includes:

determining, for a signal sample with a zero value amplitude at the zero crossing point, a tangent value of the sample; and

defining the zero value amplitude as a non-zero value depending upon the tangent of said sample point.

- 11. (New) The system of claim 10, wherein said processor defining comprises defining said zero value amplitude according to whether said tangent is positive or negative.
- 12. (New) The system of claim 9, further comprising: where a portion of said signal does not contain a zero crossing point, said processor defines a range of said signal that contains a zero crossing point; extracts a set of parameters from a plurality of duration periods of said range; calculates a maximum difference between said plurality of duration periods in said range; and compares said maximum difference of said range with said threshold.
- 13. (New) The system of claim 9, wherein the maximum difference is calculated by the processor between a sum of all said durations and a single said duration.
- 14. (New) The system of claim 9, wherein the maximum difference is calculated by the processor using a mean difference between a sum of all said durations and a single duration.

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- 15. (New) The system of claim 9, wherein the device defines tone signals according to an International Telecommunications Union (ITU) recommendation G.729 Annex B VAD recommendation.
- 16. (New) The system of claim 9, wherein the processor calculates the maximum difference includes calculating a product between the sample and the sample's adjacent sample in a group of signal samples.